Cosmetic application material.

Cationization of LMW guar.

5-20 cps at 1% and 25°C (30 rpm).

80% or more components have MW of 4,500-35,000.

Clear GGH solution.

Code: 345-69604
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RAW MATERIALS FOR COSMETICS, AND COSMETICS USING THE RAW MATERIALS

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[There are no amendments to this patent.]

Abstract

Problems to be solved

Conventional cationized polysaccharides are used in cosmetics with priority given to hair preparations. However depending on the type of cationized polysaccharide, people have the feeling of sticky hair and dry and loose hair during or after using the hair preparations.

Means to solve the problems

The above-mentioned problems can be solved by using materials obtained by cationizing galactomannan having a specific molecular weight.

Claims

1. Raw materials for cosmetics, obtained by substituting some of the hydroxy groups of a galactomannan molecule by a cationic compound in the decomposition product of galactomannan.

2. Raw materials for cosmetics according to Claim 1, characterized in that the viscosity of a 10% aqueous solution of the decomposition product of galactomannan at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

3. Raw materials for cosmetics according to Claim 1 or Claim 2, characterized in that the galactomannan is limited to decomposition in such a way that at least 80% of the molecular weight of the decomposition product is 4500-35,000.

4. Cosmetics containing the raw materials described in any of Claims 1–3.

Detailed explanation of the invention

[0001]

Technical field of the invention

The present invention pertains to raw materials for cosmetics, which raw materials are obtained by substituting some of the hydroxy groups of the decomposition product of galactomannan having a specific molecular weight by a cationic compound (hereinafter referred to as cationization), and it also pertains to cosmetics containing the raw materials. According to the present invention, cationized galactomannan decomposition products can be obtained which have good affinity for hair and skin and impart a smooth and good feeling during and after using the cosmetics.

[0002]

Prior art

Recently the use of natural products and their derivatives as raw materials for cosmetics has become popularized, and cationization products of natural polysaccharides such as cellulose, starch, guar gum, etc., have been used in hair preparations, shampoos, hair rinses, hair creams, etc. For example, the use of cationized cellulose in cosmetics and shampoo was described in Japanese Kokai Patent Application No. Sho 47[1972]-20635, the use of cationized hydroxyalkyl starch in cosmetics and shampoo was described in Japanese Kokai Patent Application No. Sho 60[1985]-42763, and the use of cationized hydroxyalkyl galactomannan in cosmetics and shampoo was described in Japanese Kokai Patent Application No. Hei 7[1995]-17825. Among the cationized natural polysaccharides, chlorinated [2-hydroxy-3-(trimethylammonio)propyl]guar gum and chlorinated [2-hydroxy-3-(trimethylammonio)propyl]hydroxyethylcellulose (hereinafter referred to as cationized guar gum and cationized cellulose) have already been used in shampoos and hair preparations. However when they were used as conditioning shampoos and hair preparations, the feeling after their use was not satisfactory. For example, though cationized guar gum gives a hydrated and soft feeling, it imparts an unpleasant sticky feeling, and if the amount of additive for suppressing the unpleasant feeling is reduced, then the conditioning effect could not be expected. When cationized cellulose is used, the hair becomes dry and fly-away and squeaky therefore there was a problem with the feeling of the hair. Moreover, the viscosity of the aqueous solution of these cationized polysaccharide is high so they are not convenient.

[0003]

Problems to be solved by the invention

The object of the present invention is to provide (1) cationized decomposed galactomannan as a raw material for cosmetics which give users excellent feeling after using them and (2) such cosmetics containing the raw material.

[0004]

Means to solve the problems

In view of the above-mentioned problems the present inventors conducted an extensive study and as a result it was found that when a cationized decomposed galactomannan obtained by decomposing galactomannan and then reacting with a cationization compound such as glycidyltrialkylammonium salt or hydroxypropyltrimethylammonium chloride ether was used as a base for cosmetics whose aqueous solutions have a low viscosity, which are easy to handle, and which give users good feeling after using, then the above-mentioned problems were solved, thereby they attained the present invention. Namely, the present invention pertains to (1) raw materials for cosmetics obtained by substituting some of the hydroxy groups of the molecule of the decomposition product of galactomannan by a cationic compound and (2) cosmetics using the raw materials.

[0005]

Embodiment of the invention

There is no limitation to the origin of galactomannan used in the present invention, so galactomannan originating from plants and microorganisms may be used; preferably, galactomannan from plants such as locust bean gum and guar gum is used. It is known that the molecular weight of galactomannan from locust bean gum is approximately 310,000 and the molecular weight of galactomannan from guar gum is approximately 200,000-300,000 (Sogo Tatorui Kagaku [Comprehensive Polysaccharide Science], Vol. II, Published on December 1, 1974, by Kodansha Co., Ltd.).

[0006]

Galactomannan can be decomposed by any method such as (1) biochemical decomposition method wherein polysaccharide-decomposing enzymes, bacteria, or true fungi are used directly, (2) chemical decomposition method using acid and alkali, (3) physical decomposition method using high-speed agitation and shearing machines, etc.; and depending on necessity, a suitable purification method can be used to make the molecular weight fall within a certain range. For the purification methods, ultrafiltration, reverse osmosis membrane, chromatography, etc., may be used. Among these decomposition methods, compared with the chemical decomposition method and physical decomposition method, the use of the enzymatic decomposition method can give a more uniform molecular weight, therefore after the decomposition, a process for obtaining a uniform molecular weight is unnecessary, therefore especially the use of the enzymatic decomposition method is recommended. There is no limitation to the type and origin of the enzyme, however the use of β-mannanase originating from bacteria of Aspergillus genus and bacteria of Rhizopus genus is preferable. The molecular weight of galactomannan enzyme decomposition product can be varied by changing the reaction time of the enzyme, however when it is cationized and then compounded with hair preparations such as shampoos and hair rinses, etc., an unpleasant sticky feeling can be obtained if the molecular weight after decomposition is too large, whereas a conditioning effect cannot be obtained if the molecular weight after decomposition is too small. Therefore usually at least 50% of the total molecular weight of the enzymatic decomposition product of galactomannan is 4500-35,000; preferably at least 50% and more preferably at least 80% of the total molecular weight of the enzyme decomposition product of galactomannan is 8000-24,000. The molecular weight can be determined using a high-performance liquid chromatograph equipped with a gel filtration column. For example, commercially available polysaccharides with known molecular weights are used as standard samples, then the relationship between the molecular weight and the retention time is measured, and then under the same conditions the galactomannan decomposition product is analyzed, then its molecular weight can be measured easily.

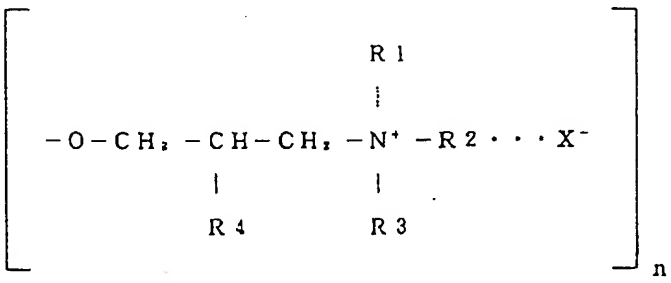
[0007]

The viscosity of a 10% aqueous solution of the polysaccharide having such a molecular weight is preferably 5-20 cps when measured by a Brookfield viscometer at 25°C and 30 rpm. The galactomannan decomposition product obtained using such a method can be cationized by a well-known method. For example, it can be carried out by adding a cationizing agent to dried decomposed galactomannan or an aqueous or an alcoholic solution or a suspension of

decomposed galactomannan, and then heating the resulting mixture to carry out the reaction in the presence of an alkali catalyst, and neutralizing the reaction mixture after the finish of the reaction. The cationizing agent of the present invention is defined as a compound which, by substitution reaction with the hydroxy groups of galactomannan decomposition product, can make the product electrically positive, and there is no limitation to its type, however preferable examples include glycidyltrialkylammonium salts and 3-halo-2-hydroxypropyltrialkylammonium salts such as glycidyltrimethylammonium chloride, glycidyltriethylammonium chloride, glycidylttripropylammonium chloride, glycidylethyldimethylammonium chloride, glycidyldiethylmethylammonium chloride, and their corresponding bromides and iodide; 3-chloro-2-hydroxypropyltrimethylammonium chloride, 3-chloro-2-hydroxypropyltriethylammonium chloride, 3-chloro-2-hydroxypropyltriethylammonium chloride [sic], 3-chloro-2-hydroxypropyltripropylammonium chloride, 3-chloro-2-hydroxypropylethyldimethylammonium chloride, and their corresponding bromides and iodides; and quaternary ammonium compounds such as halides of imidazoline-ring-containing compounds. Some of the structures of cationized decomposed galactomannan to which one or more of these cationizing agents have been introduced are shown below.

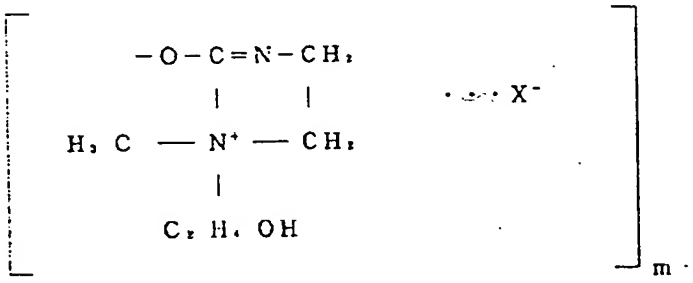
[0008]

[Structure 1]



[0009]

[Structure 2]



[0010]

(wherein R1, R2, and R3 are hydrogen atoms, C_{1-3} alkyl group or benzyl group, R4 is a hydrogen atom or a hydroxy group, X^- is an anion), however it is not limited to these. If the content of nitrogen introduced by the cationization reaction is less than 0.2 wt%, and if it is compounded with cosmetics, the affinity for skin and hair is low, thus an effect cannot be exhibited, whereas if it is greater than 5 wt% it then becomes sticky and imparts an unpleasant feeling. The preferable content of nitrogen is 0.5-3.0 wt% based on galactomannan decomposition product. The content of nitrogen can be determined by the Kjeldahl method or semimicro Kjeldahl method. After the cationization reaction, neutralization is carried out consecutively, however depending on the acid used, the anion shown in formula 1 or formula 2 can be obtained. There is no limitation to the acid, however usually hydrochloric acid is used so the cationized decomposed galactomannan becomes a chloride, however an inorganic acid such as sulfuric acid, nitric acid, phosphoric acid, etc., and an organic acid such as acetic acid, citric acid, etc., can be used also. In that case, the anion of the formula 1 or formula 2 becomes a sulfate ion, nitrate ion, phosphate ion, acetate ion, or citrate ion. There is no limitation to the method for using the cationized decomposed galactomannan, however it can be compounded into hair preparations, skin cosmetics, etc., having well-known formulations, and preferably can be used in shampoos, hair rinses, hair cleansing creams, cleansing gels, etc. There is no limitation to the other ingredients in the cosmetics which use the cosmetics base for the present invention. For example, regular supports for cosmetics, diluents or surfactants, intermediate- and long-chain fatty acid esters,

hydrocarbons, proteins and their hydrolyzates, bases such as hydrous lanolin, lipid, perfume, UV-absorbing agents, humectants, hydrotropes, preservatives, antioxidants, etc., may be used. In addition, vitamins and nutritionally and medically active components may be added.

[0011]

The amount of the base to be compounded in the cosmetics of the present invention depends on the use of the cosmetics, however it is usually 0.1-10 wt%. If it is less than 0.1 wt%, the effect cannot be exhibited sufficiently, whereas if it is greater than 10 wt%, sometimes an unpleasant feeling can be obtained. The cationized decomposed galactomannan compounded into cosmetics can be determined, for example, using the following method. The cosmetic is dispersed in water, then oil components are removed using an organic solvent such as diethyl ether, then the aqueous phase is subjected to gel filtration chromatography for obtaining the fraction with molecular weight 5000-50,000. Then it is concentrated under reduced pressure, water is added to the residue thus obtained to dilute it suitably, then when methylene blue powder and chloroform are added to carry out osmosis, the pigment transfers to the chloroform layer thus the presence of a cationized decomposed galactomannan can be confirmed. Next, application examples will be used to explain the present invention, however the present invention is not limited to these application examples.

[0012]

Application examples

Application Example 1

Citric acid was added to 900 parts of water to adjust the pH to 3.0. Then 0.2 part of galactomannase originating from the genus *Aspergillus* and 100 parts of guar gum powder were added and mixed for reacting the enzyme at 40-45°C for 24 h. After the reaction, the reaction mixture was heated at 90°C for 15 min to deactivate the enzyme. The reaction mixture was filtered to remove the insoluble matter and the thus-obtained transparent filtrate was concentrated under reduced pressure (solids: 20%), followed by spray-drying, thereby 65 parts by weight of a white powder of guar gum enzyme decomposition product were obtained. The content of water-soluble food fiber was 90% according to the enzymatic gravimetric method. The viscosity of a 10% aqueous solution of guar gum enzymatic decomposition product measured with a

Brookfield viscometer at 25°C and 30 rpm was 16 cps. When the molecular weight was measured by high-performance liquid chromatography with a G3000 PWX (Tosoh Corporation) column, it was found that 82% of the molecular weight was in the range of 8800-22,000. At this time as standard samples for molecular weight, amylose Ex – 1 (molecular weight 2900, Seikagaku Kogyo Co., Ltd.), amylose Ex – 3 (molecular weight 16,000, Seikagaku Kogyo Co., Ltd.), and dextran T 40 (molecular weight 40,000, Pharmacia AB) were used to prepare retention time vs. molecular weight curves, and from the retention time of the guar gum enzymatic decomposition product, the molecular weight was determined. It is known that the average molecular weight of guar gum prior to the decomposition was 200,000-300,000 (Sogo Tatorui Kagaku, Vol. II, published on December 1, 1974 by Kodansha Co., Ltd.).

[0013]

Application Example 2

150 parts of methanol containing 25% of water were put in a 500 mL 4-neck flask equipped with a stirring apparatus, and while stirring, 70 parts of guar gum enzymatic decomposition product obtained in Application Example 1 were slowly added to the flask. Then 3 g of sodium hydroxide were added and the resulting mixture was heated to 50°C, then a solution prepared by dissolving 30 parts of glycidyltrimethylammonium chloride in 30 parts of water was added slowly and then the resulting mixture was reacted at 50°C for 6 h. After the reaction, it was neutralized with 10% hydrochloric acid and after filtration it was dried under reduced pressure to remove the solvent to give 105 parts of cationized decomposed guar gum which was a product of the present invention. The content of nitrogen in the cationized decomposed guar gum was determined by the semimicro Kjeldahl method and it was found that the content of nitrogen was 2.2%.

Application Example 3

The methods of Application Examples 1 and 2 were used, and by varying the time of guar gum enzymatic decomposition and the number of moles of cationized compound added cationized decomposed guar gums with different molecular weights and nitrogen contents were synthesized. The results are shown in Table I. The method of Application Example 1 was used to carry out high-performance liquid chromatographic analysis of molecular weight and the range of molecular weight containing at least 80% of principal constituent was shown.

[0014]

Table I

① 資料No.	分子量 ②	③ 窒素量 (w/w%)
1	44,800 ~ 70,400	1.7
2	8,800 ~ 21,600	0.3
3	8,800 ~ 21,600	0.7
4	8,800 ~ 21,600	2.2
5	8,800 ~ 21,600	4.3
6	4,800 ~ 17,500	2.0
7	200 ~ 6,400	1.8

Key: 1 Material No.
2 Molecular weight
3 Amount of nitrogen

[0015]

Application Example 4

The cationized decomposed guar gum obtained in Application Example 3, commercially available cationized cellulose (amount of nitrogen: 1.8%, Rhone-Poulenc S.A.), and cationized guar gum (amount of nitrogen: 1.5%, Rhone-Poulenc S.A.) were used to prepare shampoos having compositions shown in Table II.

[0016]

Table II

	A	B	C	D
① ラウリルエーテル硫酸ナトリウム	10	10	10	10
② ラウリン酸トリエタノールアミン	5	5	5	5
③ ヤシ油脂肪酸ジエタノールアミド	2	2	2	2
④ 実施例3で得られたカチオン化分解グアーガム	1	0	0	0
⑤ カチオン化セルロース	0	1	0	0
⑥ カチオン化グアーガム	0	0	1	0
⑦ エデト酸ジナトリウム	0.1	0.1	0.1	0.1
⑧ 香料、着色料	⑩(少量)	⑩(少量)	⑩(少量)	⑩(少量)
⑨ 精製水	全100 ⑪	全100 ⑪	全100 ⑪	全100 ⑪

Key: 1 Sodium lauryl sulfate
2 Lauric acid triethanolamine
3 Coconut oil fatty acid diethanolamide
4 Cationized decomposed guar gum obtained in Application Example 3
5 Cationized cellulose
6 Cationized guar gum
7 EDTA disodium salt
8 Perfume, coloring material
9 Purified water
10 A small amount
11 Total

[0017]

For sample A, 7 kinds of cationized decomposed guar gum obtained in Application Example 3 were used for preparing 7 kinds of shampoos A-1 to A-7 (corresponding to the Material No. in Table I).

Application Example 5

The ten kinds of shampoo prepared in Application Example 4 were used by 10 women; the lathering during shampooing, smoothness of hair, ease of rinsing the hair, smoothness of hair

after using the shampoo, lack of tack of the hair, ease of combing the hair, and luster of the hair were evaluated. The results of the evaluation were ranked in 5 levels wherein 5 points were given to the best and 1 point was given to the worst. The points were added up and the results are shown in Table III.

[0018]

Table III

	A－1	A－2	A－3	A－4	A－5	A－6	A－7	B	C	D
(1) 使用中										
(2) 泡立ち	3．9	3．8	4．8	4．9	3．7	4．6	1．8	4．1	4．2	1．2
(3) 滑らかさ	2．7	2．8	4．7	4．8	4．4	4．5	1．9	2．8	3．0	1．4
(4) すすぎやすさ	1．9	4．2	4．8	4．7	2．8	4．9	4．0	1．5	2．3	2．8
(5) 使用後										
(3) 滑らかさ	3．8	1．8	3．6	4．5	3．9	2．8	2．9	1．6	3．5	1．2
(6) べとつきのなさ	1．8	3．5	3．7	4．4	3．8	3．6	3．2	4．3	2．2	3．4
(7) くし通りのよさ	3．4	2．8	4．7	4．9	3．6	4．7	1．5	2．0	4．2	1．6
(8) つや	1．9	1．6	3．6	4．9	3．4	3．5	1．4	1．4	1．7	1．1
(9) 総合評価	△	○	◎	◎	○	◎	×	△	△	×

◎：極めて良好 ○：良好 △：やや不良 ×：不良

Key:
1 During shampooing
2 (Lathering)
3 Smoothness
4 Ease of rinsing
5 After using the shampoo
6 Lack of tack
7 Ease of combing the hair
8 Luster of the hair
9 Overall evaluation
10 Excellent
11 Good
12 Fair
13 Poor

[0019]

From Table III, it is clear that the cationized decomposed guar gum which is one of the products of the present invention imparts a good feeling when using it, and the feeling after its use is also better than that from conventional cationized polysaccharide.

Application Example 6

The cationized decomposed guar gum obtained in Application Example 3, commercially available cationized cellulose (amount of nitrogen: 1.8%, Rhone-Poulenc S.A.), and cationized guar gum (amount of nitrogen: 1.5%, Rhone-Poulenc S.A.) were used to prepare cream rinses having the following compositions.

[0020]

Table IV

	A	B	C	D
(1) 塩化ステアリルトリメチルアンモニウム	3.0	3.0	3.0	3.0
(2) 塩化ジステアリルジメチルアンモニウム	2.0	2.0	2.0	2.0
(3) ベヘニルアルコール	2.5	2.5	2.5	2.5
(4) 2-オクチルドデカノール	1.0	1.0	1.0	1.0
(5) ポリオキシエチレン(2) オレイルエーテル	2.0	2.0	2.0	2.0
(6) シリコンオイル	0.2	0.2	0.2	0.2
(7) 実施例3で得られたカチオン化分解グアーガム*	2.0	0	0	0
(8) カチオン化セルロース *	0	2.0	0	0
(9) カチオン化グアーガム *	0	0	2.0	0
(10) 1,3-ブチレングリコール	3.0	3.0	3.0	3.0
(11) 香料, 着色料	(13)(少量)	(13)(少量)	(13)(少量)	(13)(少量)
(12) 精製水	全100 (14)	全100 (14)	全100 (14)	全100 (14)

(15) * 10%溶液

Key:
1 Stearyltrimethylammonium chloride
2 Distearyldimethylammonium chloride
3 Behenyl alcohol
4 2-Octyldodecanol
5 Polyoxyethylene (2) oleyl ether
6 Silicone oil
7 Cationized decomposed guar gum obtained in Application Example 3*
8 Cationized cellulose*
9 Cationized guar gum*

10 1,3-Butylene glycol
11 Perfume, coloring material
12 Purified water
13 A small amount
14 Total
15 *: 10% solution

[0021]

For sample A, 7 kinds of cationized decomposed guar gum obtained in Application Example 3 were used for preparing 7 kinds of cream rinse A-1 to A-7 (corresponding the Material No. in Table I).

Application Example 7

The 10 kinds of rinse prepared in Application Example 6 were used by 10 women; the smoothness of hair after using them, lack of tack of the hair, ease of combing the hair, ease of styling, and luster of the hair were evaluated. The results of the evaluation were ranked in 5 levels, wherein 5 points were given to the best and 1 point was given to the worst. The points were added up and the results are shown in Table V.

[0022]

Table V

	A－1	A－2	A－3	A－4	A－5	A－6	A－7	B	C	D
① 滑らかさ	3．5	4．2	4．9	4．8	4．9	3．6	2．4	2．4	4．0	1．0
② べとつきのなさ	2．1	3．7	4．7	4．7	2．8	4．7	3．6	3．8	2．3	3．3
③ くし通りのよさ	3．0	3．0	3．8	4．7	3．8	4．1	3．4	2．7	4．1	1．5
④ まとまりやすさ	3．2	3．0	4．2	4．3	3．7	4．0	1．6	3．3	3．5	1．3
⑤ つや	3．5	3．4	4．8	5．0	3．6	4．1	1．9	4．2	3．6	2．0
⑥ 総合評価	△	○	◎	◎	○	◎	△	○	○	×

⑦ ◎：極めて良好 ⑧ ○：良好 ⑨ △：やや不良 × ⑩：不良

Key: 1 Smoothness
2 Lack of tack
3 Ease of combing the hair

4	Ease of styling
5	Luster of the hair
6	Overall evaluation
7	Excellent
8	Good
9	Fair
10	Poor

[0023]

From Table V it is clear that the cationized decomposed guar gum which is one of the products of the present invention imparts a good finishing feel. It is believed that conventional cationized cellulose and cationized guar gum are inferior in smoothing the hair and in stickiness of hair after using them, therefore their evaluation results are not good.

Application Example 8

Citric acid was added to 900 parts of water to adjust the pH to 3.0. Then 0.2 part of galactomannase originating from the genus Aspergillus and 100 parts of locust bean gum powder were added and mixed, and the enzyme was reacted at 40-45°C for 36 h. After the reaction it was heated at 90°C for 15 min for deactivate the enzyme. Then the reaction mixture was filtered to remove insoluble matter, and the thus-obtained transparent filtrate was concentrated under reduced pressure (solids: 20%), followed by spray-drying to give 60 parts of white powder. The thus-obtained enzymatically decomposed locust bean gum product was tested according to the methods of Application Example 1; it was found that the content of water-soluble food fiber was 95%, the viscosity of a 10% aqueous solution was 18 cps, and 80% of total the molecular weight was in the range of 9600-22,400. It is known that the molecular weight of the locust bean gum prior to enzymatic decomposition was approximately 310,000 (Sogo Tatorui Kagaku, Vol. II, published on December 1, 1974 by Kodansha Co., Ltd.).

[0024]

Application Example 9

150 parts of methanol containing 25% of water were put in a 500 mL 4-neck flask equipped with a stirring apparatus, and while stirring, 70 parts of decomposed product of locust bean gum obtained in Application Example 8 were slowly added to the flask. Then 3 g of sodium

hydroxide were added and the resulting mixture was heated to 50°C, then a solution prepared by dissolving 30 parts of glycidyltrimethylammonium chloride in 30 parts of water was added slowly, and then the resulting mixture was reacted at 50°C for 10 h. After the reaction, it was neutralized with 10% hydrochloric acid, and after filtration it was dried under reduced pressure to remove the solvent thereby giving 102 parts of cationized decomposed locust bean gum. The content of nitrogen of the cationized decomposed locust bean gum was determined to be 2.0%.

[0025]

Application Example 10

The cationized decomposed locust bean gum obtained in Application Example 9, commercially available cationized cellulose (amount of nitrogen: 1.8%, Rhone-Poulenc S.A.), and cationized guar gum (amount of nitrogen: 1.5%, Rhone-Poulenc S.A.) were used to prepare a cleansing cream having the following compositions.

[0026]

Table VI

	A	B	C	D
① サラシミツロウ	3	3	3	3
② 流動パラフィン	50	50	50	50
③ ワセリン	15	15	15	15
④ ソルビタンセスキオレート	4	4	4	4
⑤ ポリオキシエチレンソルビタンモノオレート	1	1	1	1
⑥ 実施例9で得られた カチオン化分解ローカストビーンガム	1	0	0	0
⑦ カチオン化セルロース	0	1	0	0
⑧ カチオン化グアーガム	0	0	1	0
⑨ 香料、着色料	⑪ (少量)	⑪ (少量)	⑪ (少量)	⑪ (少量)
⑩ 精製水	全100 ⑫	全100 ⑫	全100 ⑫	全100 ⑫

Key: 1 Bleached beeswax
2 Liquid paraffin
3 Vaseline
4 Sorbitan sesquioleate
5 Polyoxyethylene sorbitan monooleate

6 Cationized decomposed locust bean gum obtained in Application Example 9
7 Cationized cellulose
8 Cationized guar gum
9 Perfume, coloring material
10 Purified water
11 A small amount
12 Addition of water to a total of 100 parts

[0027]

Application Example 11

Four kinds of cleansing cream obtained in Application Example 10 were used by 7 women, then the ease of washing off, lack of tack, and the feeling of dampness after use them were evaluated using 5 ranks wherein 5 points were given to the best and 1 point was given to the worst. The points were added up and the results are shown in Table VII.

[0028]

Table VII

	A	B	C	D
① 洗い落としやすさ	4．5	3．2	1．8	3．6
② べとつきのなさ	4．4	2．8	1．5	4．0
③ 滑らかさ	4．9	2．7	4．8	1．1
④ 使用後の潤い感	4．6	3．1	4．1	1．1
⑤ 総合評価	◎	△	○	×

⑥◎：極めて良好 ⑦○：良好 ⑧△：やや不良 ⑨×：不良

Key: 1 Ease of washing off
2 Lack of tack
3 Smoothness
4 Feeling of dampness after use
5 Overall evaluation
6 Excellent
7 Good
8 Fair
9 Poor

[0029]

From Table VII it is clear that cationized decomposed locust bean gum imparts a desirable feeling to the skin.

[0030]

The embodiments of the present invention and the objective products are as follows:

(1) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a galactomannan decomposition product by cationic compounds.

(2) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of guar gum decomposition product by cationic compounds.

(3) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a locust bean gum decomposition product by cationic compounds.

(4) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic product of galactomannan by cationic compounds.

[0031]

(5) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of guar gum by cationic compounds.

(6) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of locust bean gum by cationic compounds.

(7) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a galactomannan decomposition product by quaternary ammonium compounds.

(8) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a guar gum decomposition product by quaternary ammonium compounds.

(9) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a locust bean gum decomposition product by quaternary ammonium compounds.

[0032]

(10) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of galactomannan by quaternary ammonium compounds.

(11) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of guar gum by quaternary ammonium compounds.

(12) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of locust bean gum by quaternary ammonium compounds.

(13) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a galactomannan decomposition product by cationic compounds; the viscosity of a 10% aqueous solution of the galactomannan decomposition product at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(14) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a guar gum decomposition product by cationic compounds; the viscosity of a 10% aqueous solution of the guar gum decomposition product at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

[0033]

(15) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a locus bean gum decomposition product by cationic compounds; the viscosity of a 10% aqueous solution of the locust bean gum decomposition product at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(16) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of galactomannan by cationic compounds; the viscosity of a 10% aqueous solution of the enzymatic decomposition product of galactomannan at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(17) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of guar gum by cationic compounds; the viscosity of a 10% aqueous solution of the enzymatic decomposition product of guar gum at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

[0034]

(18) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of locust bean gum by cationic compounds; the viscosity of a 10% aqueous solution of the enzymatic decomposition product of locust bean gum at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(19) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a galactomannan decomposition product by quaternary ammonium compounds; the viscosity of a 10% aqueous solution of the galactomannan decomposition product at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(20) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a guar gum decomposition product by quaternary ammonium compounds; the viscosity of a 10% aqueous solution of the guar gum decomposition product at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(21) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of locust bean gum decomposition product by quaternary ammonium compounds; the viscosity of a 10% aqueous solution of the locust bean gum decomposition product at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

[0035]

(22) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of galactomannan by quaternary ammonium compounds; the viscosity of a 10% aqueous solution of the enzymatic decomposition product of galactomannan at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(23) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of guar gum by quaternary ammonium compounds; the viscosity of a 10% aqueous solution of the enzymatic decomposition product of guar gum at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

(24) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of locust bean gum by quaternary ammonium compounds; the viscosity of a 10% aqueous solution of the enzymatic decomposition product of locust bean gum at 25°C and 30 rpm measured by a Brookfield viscometer is 5-20 cps.

[0036]

(25) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a galactomannan decomposition product by cationic compounds; at least 80% of the molecular weight of the galactomannan decomposition product is distributed in the range of 4500-35,000.

(26) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a guar gum decomposition product by cationic compounds; at least 80% of the molecular weight of the guar gum decomposition product is distributed in the range of 4500-35,000.

(27) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a locust bean gum decomposition product by cationic compounds; at least 80% of the molecular weight of the locust bean gum decomposition product is distributed in the range of 4500-35,000.

(28) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of galactomannan by cationic compounds; at least 80% of the molecular weight of the enzymatic decomposition product of galactomannan is distributed in the range of 4500-35,000.

(29) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of guar gum by cationic compounds; at least 80% of the molecular weight of the enzymatic decomposition product of guar gum is distributed in the range of 4500-35,000.

[0037]

(30) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of locust bean gum by cationic compounds; at least 80% of the molecular weight of the enzymatic decomposition product of locust bean gum is distributed in the range of 4500-35,000.

(31) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a galactomannan decomposition product by quaternary ammonium compounds; at least 80% of the molecular weight of the galactomannan decomposition product of guar gum is distributed in the range of 4500-35,000.

(32) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a guar gum decomposition product by quaternary ammonium compounds; at least 80% of the molecular weight of the guar gum decomposition product is distributed in the range of 4500-35,000.

(33) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of a locust bean gum decomposition product by quaternary ammonium compounds; at least 80% of the molecular weight of the locust bean gum decomposition product is distributed in the range of 4500-35,000.

(34) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of galactomannan by quaternary ammonium compounds; at least 80% of the molecular weight of the enzymatic decomposition product of galactomannan is distributed in the range of 4500-35,000.

[0038]

(35) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of guar gum by quaternary ammonium compounds; at least 80% of the molecular weight of the enzymatic decomposition product of guar gum is distributed in the range of 4500-35,000.

(36) Raw materials for cosmetics are prepared by substituting some of the hydroxy groups of an enzymatic decomposition product of locust bean gum by quaternary ammonium compounds; at least 80% of the molecular weight of the enzymatic decomposition product of locust bean gum is distributed in the range of 4500-35,000.

(37) Cosmetics which contain raw materials of any of the above-mentioned (1)-(36).

(38) Hair preparations which contain raw materials of any of the above-mentioned (1)-(36).

(39) Cleansing cosmetics which contain raw materials of any of the above-mentioned (1)-(36).

(40) Shampoos which contains raw materials of the above-mentioned (1)-(36).

(41) Hair rinses which contain raw materials of any of the above-mentioned (1)-(36).

[0039]

Effect of the invention

When the cationized decomposed galactomannan of the present invention is compounded in hair preparations, smoothness of hair, ease of combing, and manageable hair can be obtained, and there is no unpleasant sticky feeling or squeaky feeling, therefore they can be suitably used in shampoos, hair rinses, and various cosmetics.